Kitty Kaleidoscope

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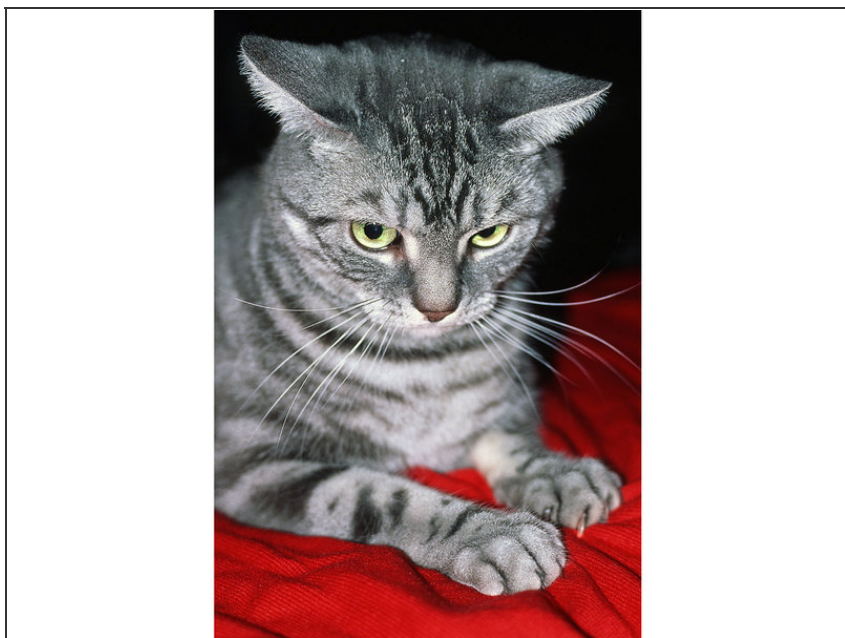

TOOLS:

- Camera (1)
- Computer (1)
- Photo imaging software (1)

SUMMARY

A typical kaleidoscope contains 2 mirrors angled at 60°, which reflect a pattern to create a symmetrical effect that we can emulate in software such as Photoshop. Here's how I did it.

## Step 1 — Choose your photo.

- Choose a photograph that has a wide range of shading from light to dark, and some features that will be recognizable after they've been chopped, rotated, and reflected (eyes always work well). For my first effort, I made an lol-cat. Here are the steps in Photoshop 6 or later.

- Choose the Polygon tool, which looks like a hexagon and is hidden in the toolbar. You may have to read Help to find it. After you select it, use **Window ⇒ Options** to show the tool Options bar (if not visible), and click the button "Create new work path" or just "Paths" (the wording varies in different Photoshop versions). Also in the tool options, specify 3 sides.

Step 2 — Find an interesting part.

- Drag to create an equilateral triangle over your photograph, then go to **Edit ⟹ Transform Path ⟹ Rotate**, or **Edit ⟹ Transform Path ⟹ Scale** (while scaling, hold down Shift so that your triangle remains symmetrical), to modify the size and position of your triangle, until it contains an interesting area of your photograph. While scaling or rotating your triangle, you can also drag it around.

- When you have what you want, press Enter to confirm.

## Step 3 — Copy path to a new layer.
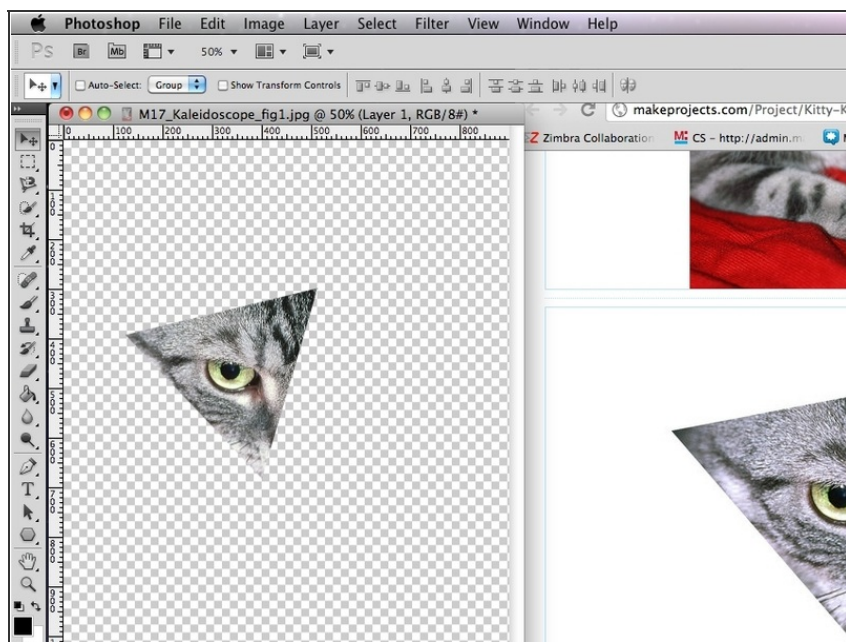
- If your Paths panel is not open, open it from **Window ⟹ Show Paths**. Photoshop will have put your triangle path in the panel. Ctrl-click (Windows) or Command-click (Mac) the name of the path to turn it into a selection. Copy, then paste, to duplicate the selected area in a new layer.

- In the Layers panel, click the eyeball beside the Background layer to hide it. In the toolbar, select the Rectangular Marquee tool.

Step 4 — Make a copy of the part.
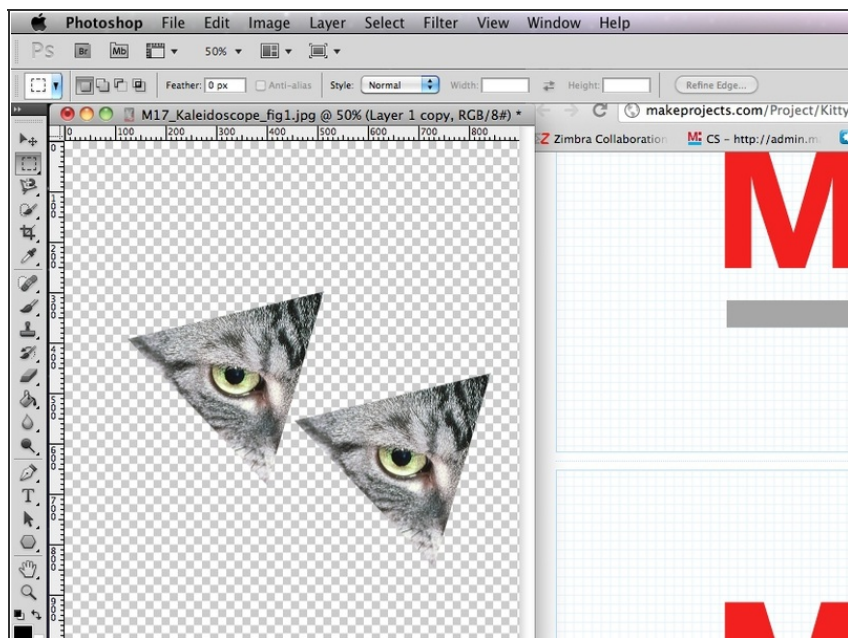
In your new layer, move the mouse pointer to the triangle, hold down Ctrl and Alt keys (Command and Option on the Mac), and drag the triangle to make a copy of it, which will pop up in another new layer.

Step 5 — Make a mirror image.
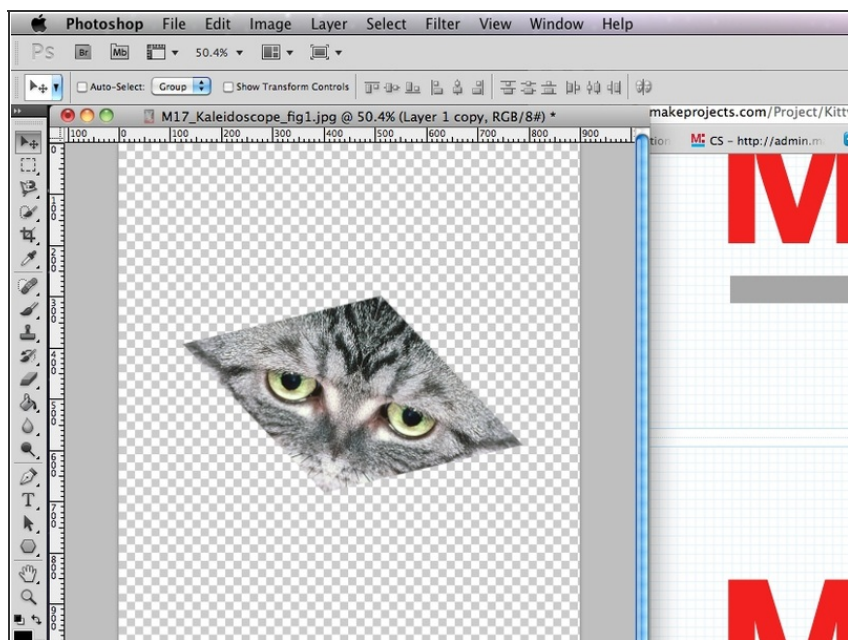
- Use **Edit ⟹ Transform ⟹ Flip Horizontal** to make a mirror image. Now use **Edit ⟹ Transform ⟹ Rotate** to turn and move the second triangle so that it goes edge-to-edge with the first. Press Enter when you have it exactly right, then Ctrl-E (Command-E on a Mac) to merge the 2 layers.

- It helps to line up one corner and shift the rotation point to the same corner. Rotate until the edges line up.
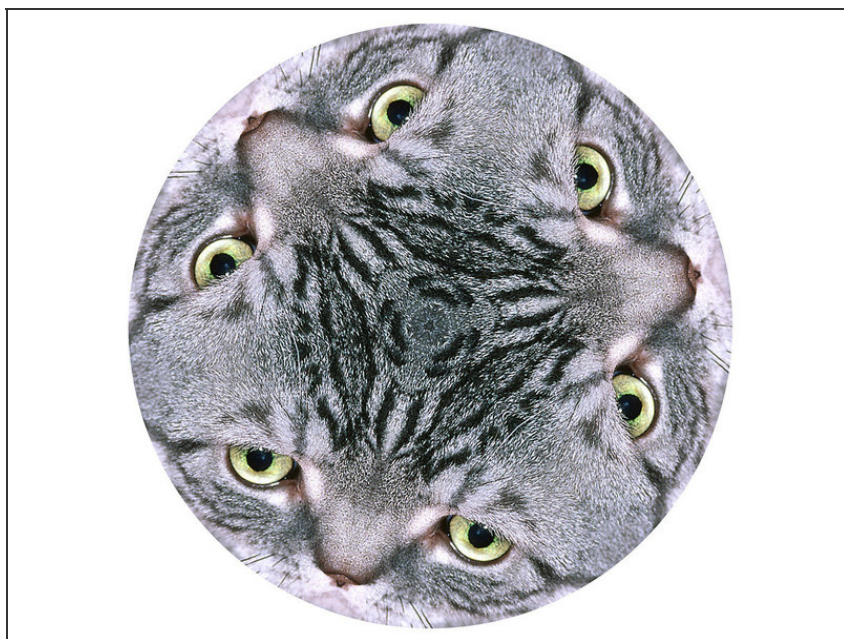
Step 6 — Make a hexagon.
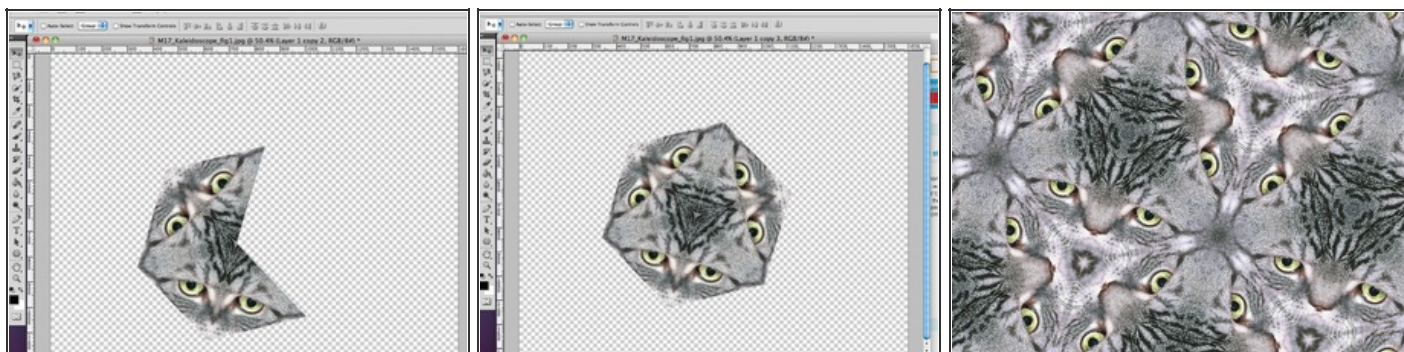
- Drag off a copy of the diamond shape that you've created, select **Edit ⇒ Transform ⇒ Rotate**, and type a value of 120 degrees in the Tool Options palette. Drag the selection into place, press Enter, then repeat to make one more rotated diamond shape to complete a hexagon.

Step 7 — Crop into a circle.

- Go to **Layer ⇒ Flatten Image** (discard the hidden background layer containing your original photograph). Select the Elliptical Marquee tool, hold down Shift, and make a circular selection that extends to the edges of your image. Go to **Select ⇒ Inverse** and then delete, to remove pixels outside of the circle. You now have your kaleidoscopic image — or in my case, a fine lol-cat!

Step 8
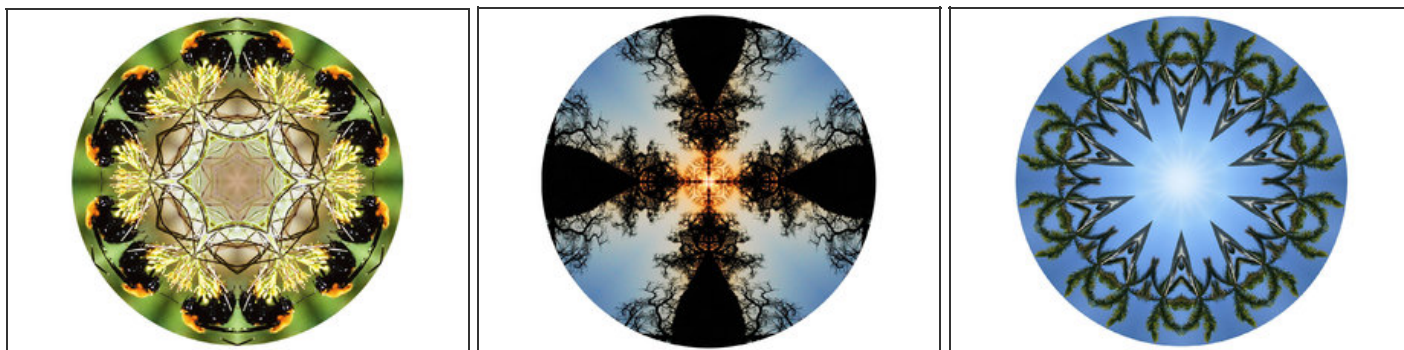
- These pictures were repeated 6, 12, and 8 times. Can you use other numbers of repetitions? Of course! Divide the number of repetitions that you want into 360°. Then make a selection with the Rectangular Marquee tool, go to **Edit ⇒ Transform Path ⇒ Skew**, and in the Tool Options bar, enter the number of degrees for the horizontal skew angle. Convert it to a selection as in Step 3 and use the Rectangular Marquee tool to chop the left or right part, to leave you with a triangle that you can reflect and rotate as before. I used palm trees, reflected them, then rotated 10 copies of the pair.

- Repeated angular patterns have been used in mandalas to form a focus for meditation. There's something about this kind of pattern that fascinates the eye. Applying this process to everyday photographs may not help you reach an altered state of consciousness, but it can be fun.

This project first appeared in [MAKE Volume 17](#), page 84.

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